

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
6 December 2001 (06.12.2001)

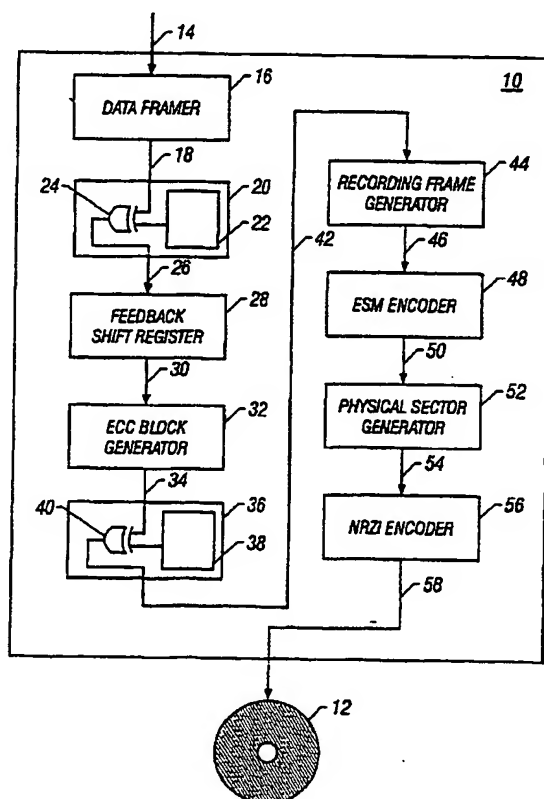
PCT

(10) International Publication Number  
WO 01/93265 A3

- (51) International Patent Classification<sup>7</sup>: G11B 20/10, 20/00
- (21) International Application Number: PCT/US01/17870
- (22) International Filing Date: 1 June 2001 (01.06.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 09/586,680 1 June 2000 (01.06.2000) US
- (71) Applicant: MACROVISION CORPORATION  
[US/US]; 1341 Orleans Drive, Sunnyvale, CA 94089 (US).
- (72) Inventor: DOWNING, Daniel, D.; P.O. Box 371048, Montara, CA 94037 (US).
- (74) Agent: NGUYEN, Frank; Macarovision Corporation, 1341 Orleans Drive, Sunnyvale, CA 94089 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report

[Continued on next page]

(54) Title: SECURE DIGITAL VIDEO DISK AND PLAYER



(57) Abstract: A method for recording data on an optical medium is disclosed. In one embodiment, the method includes receiving main data from a data source, determining a plurality of data frame values in response to the main data, inverting at least one selected bit in at least one of the data frame values to generate a plurality of encoded data frames, scrambling the encoded data frames by a feedback shift register to generate scrambled data frames, generating ECC values in response to the scrambled data frames, adding the ECC values to the scrambled data frames to generate an ECC block, rearranging the ECC block to generate a plurality of recording frames, encoding the recording frames by an eight-to-sixteen modulation (ESM) encoder to generate code words, adding sync values to the code words to generate a plurality of physical sectors, and recording the physical sectors on the optical medium. A complementary method for reading and decoding data from an optical medium is also disclosed. These complementary encoding and decoding schemes provide a method for creating and reading proprietary format DVDs which may not be read or copied by conventional DVD players. These encoding and decoding schemes result from relatively minor modifications to existing DVD standards, allowing many standard system components to be used and thereby making the encoding/decoding system relatively easy and inexpensive to implement.

WO 01/93265 A3

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/17870

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G11B20/10 G11B20/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G11B H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 794 496 A (SONY CORP) 10 September 1997 (1997-09-10)  abstract figures 1,25,26,28,29 column 4, line 59 -column 5, line 12 column 11, line 4 - line 9 column 17, line 47 -column 18, line 18 column 21, line 38 - line 45	1,2,4-7; 9,11, 13-15
Y		8,10
A	--- -/-	3,12

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*Z\* document member of the same patent family

Date of the actual completion of the international search

8 January 2002

Date of mailing of the international search report

22/01/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+31-70) 340-3016

Authorized officer

Ogor, M

# INTERNATIONAL SEARCH REPORT

Intern. Application No  
PCT/US 01/17870

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ECMA: STANDARDIZING INFORMATION AND COMMUNICATION SYSTEMS: "Standard ECMA-272, 2nd edition: 120 mm DVD Rewritable Disk (DVD-RAM)" STANDARD ECMA, XX, XX, no. 272, June 1999 (1999-06), pages 1-115, XP002186767 cited in the application page 14 -page 22	8,10
A	WO 98 54713 A (DILLA LIMITED C) 3 December 1998 (1998-12-03) page 5, line 29 - line 32 page 7, line 1 - line 5	1,5,7,9, 14
P,A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 22, 9 March 2001 (2001-03-09) & JP 2001 135019 A (HITACHI LTD), 18 May 2001 (2001-05-18) abstract	1,5,7,9, 14

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/17870

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0794496	A	10-09-1997	EP 0794496 A1	10-09-1997
			US 5901127 A	04-05-1999
			CN 1159235 A	10-09-1997
			WO 9702531 A1	23-01-1997
			JP 9073414 A	18-03-1997
			US 2001046295 A1	29-11-2001
WO 9854713	A	03-12-1998	AU 7228298 A	30-12-1998
			BR 9804931 A	08-09-1999
			CN 1236468 T	24-11-1999
			EP 0916134 A1	19-05-1999
			WO 9854713 A1	03-12-1998
			JP 2001507849 T	12-06-2001
			TW 399200 B	21-07-2000
JP 2001135019	A	18-05-2001	NONE	